U.S. Department
of Transportation

**Pipeline and
Hazardous Materials
Safety Administration**

**East Building, PHH-23
1200 New Jersey Avenue SE
Washington, D.C. 20590**

COMPETENT AUTHORITY CERTIFICATION FOR A TYPE B(U) RADIOACTIVE MATERIALS PACKAGE DESIGN CERTIFICATE USA/9157/B(U)-96, REVISION 7

This certifies that the radioactive material package design described has been certified by the Competent Authority of the United States as meeting the regulatory requirements for a Type B(U) packaging for radioactive material as prescribed in the regulations of the International Atomic Energy Agency[1] and the United States of America[2].

1. Package Identification - Model No. IR-100.

2. Package Description and Authorized Radioactive Contents - as described in U.S. Nuclear Regulatory Commission Certificate of Compliance No. 9157, Revision 12 (attached).

3. General Conditions -

   a. Each user of this certificate must have in his possession a copy of this certificate and all documents necessary to properly prepare the package for transportation. The user shall prepare the package for shipment in accordance with the documentation and applicable regulations.

   b. Each user of this certificate, other than the original petitioner, shall register his identity in writing to the Office of Hazardous Materials Technology, (PHH-23), Pipeline and Hazardous Materials Safety Administration, U.S. Department of Transportation, Washington D.C. 20590-0001.

   c. This certificate does not relieve any consignor or carrier from compliance with any requirement of the Government of any country through or into which the package is to be transported.

   d. Records of Quality Assurance activities required by Paragraph 310 of the IAEA regulations[1] shall be maintained and made available to the authorized officials for at least three years after the last shipment authorized by this certificate. Consignors in the United States exporting shipments under this certificate shall satisfy the applicable requirements of Subpart H of 10 CFR 71.

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[1] "Regulations for the Safe Transport of Radioactive Material, 1996 Edition (Revised), No. TS-R-1 (ST-1, Revised)," published by the International Atomic Energy Agency(IAEA), Vienna, Austria.

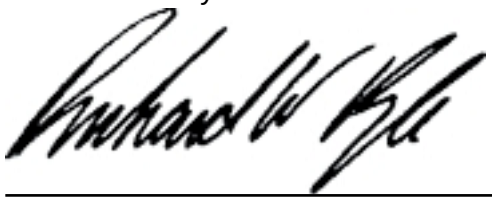
[2] Title 49, Code of Federal Regulations, Parts 100-199, United States of America.

4. Marking and Labeling - The package shall bear the marking USA/9157/B(U)-96 in addition to other required markings and labeling.

5. Expiration Date - This certificate expires on September 30, 2009. On June 30, 2008, this certificate supersedes all previous revisions of USA/9157/B(U)-96.

This certificate is issued in accordance with paragraph 808 of the IAEA Regulations and Section 173.471 of Title 49 of the Code of Federal Regulations, in response to the July 02, 2007 petition by Industrial Nuclear Company, Inc., North Andover, MA, and in consideration of other information on file in this Office.

Certified By:



Robert A. Richard
Deputy Associate Administrator for Hazardous Materials Safety

Jul 27 2007
(DATE)

Revision 7 - issued to endorse U.S. Nuclear Regulatory Commission Certificate of Compliance No. 9157, Revision 12, to revise to a -96 designation and to increase the maximum weights of the package and its depleted uranium shield.

NRC FORM 618 (8-2000) 10 CFR 71	U.S. NUCLEAR REGULATORY COMMISSION

CERTIFICATE OF COMPLIANCE
FOR RADIOACTIVE MATERIAL PACKAGES

1 a. CERTIFICATE NUMBER	b. REVISION NUMBER	c. DOCKET NUMBER	d. PACKAGE IDENTIFICATION NUMBER	PAGE	PAGES
9157	12	71-9157	USA/9157/B(U)-96	1 OF	3

2. PREAMBLE

a. This certificate is issued to certify that the package (packaging and contents) described in Item 5 below meets the applicable safety standards set forth in Title 10, Code of Federal Regulations, Part 71, "Packaging and Transportation of Radioactive Material."

b. This certificate does not relieve the consignor from compliance with any requirement of the regulations of the U.S. Department of Transportation or other applicable regulatory agencies, including the government of any country through or into which the package will be transported.

3. THIS CERTIFICATE IS ISSUED ON THE BASIS OF A SAFETY ANALYSIS REPORT OF THE PACKAGE DESIGN OR APPLICATION

a. ISSUED TO *(Name and Address)*

Industrial Nuclear Company
14320 Wicks Blvd.
San Leandro, CA 94577

b. TITLE AND IDENTIFICATION OF REPORT OR APPLICATION

Industrial Nuclear Company application dated June 8, 1999, as supplemented.

4. CONDITIONS

This certificate is conditional upon fulfilling the requirements of 10 CFR Part 71, as applicable, and the conditions specified below.

5.

(a) Packaging

(1) Model No.: IR-100

(2) Description

The Model No. IR-100 package is approximately 8.87 inches long, 4.5 inches wide, and 8.5 inches high. The radioactive material contents consist of iridium-192 in source assemblies that meet the requirements for special form material. The source assemblies are positioned within a zircalloy or titanium "S" tube within the IR-100. The "S" tube is surrounded by a shield assembly made of depleted uranium. The uranium shield assembly is encased in a stainless steel housing. The space between the uranium shield assembly and the stainless steel casing is filled with a rigid polyurethane foam. The maximum weight of the IR-100 exposure device is 53 pounds and the maximum shield weight is 38 pounds.

(3) Drawings

The packaging is constructed in accordance with Industrial Nuclear Company Drawing Nos.: IR 100-1A, Rev. 5 and IR 100-1B, Rev. 2.

(b) Contents

(1) Type and form of material

Iridium 192 as sealed sources that meet the requirements of special form radioactive material.

5. (b) Contents (continued)

(2) Maximum quantity of material per package

120 (output) curies

Output curies are determined in accordance with American National Standard N432-1980, "Radiological Safety for the Design and Construction of Apparatus for Gamma Radiography."

6. The source must be secured in the shielded position of the packaging by the shipping plug, source assembly lock, and lock cap. The shipping plug, source assembly lock, and lock cap used must be fabricated of materials capable of resisting a 1475°F fire environment for one-half hour and maintaining their positioning function. The ball stop of the source assembly lock must engage the locking device. The flexible cable of the source assembly and shipping plug must be of sufficient length and diameter to provide positive positioning of the source in the shielded position.

7. The name plate on the exposure device must be fabricated of materials capable of resisting the fire test of 10 CFR Part 71 and maintaining its legibility.

8. In addition to the requirements of Subpart G of 10 CFR Part 71:

(a) The package must meet the Acceptance Tests and Maintenance Program of Section 8 of the application; and

(b) Each package shall be operated and prepared for shipment in accordance with the operating procedures in accordance with Section 7 of the application.

9. The package authorized by this certificate is hereby approved for use under the general license provisions of 10 CFR 71.17.

10. Revision No. 11 of this certificate may be used until June 30, 2008.

11. Expiration date: September 30, 2009.

REFERENCES

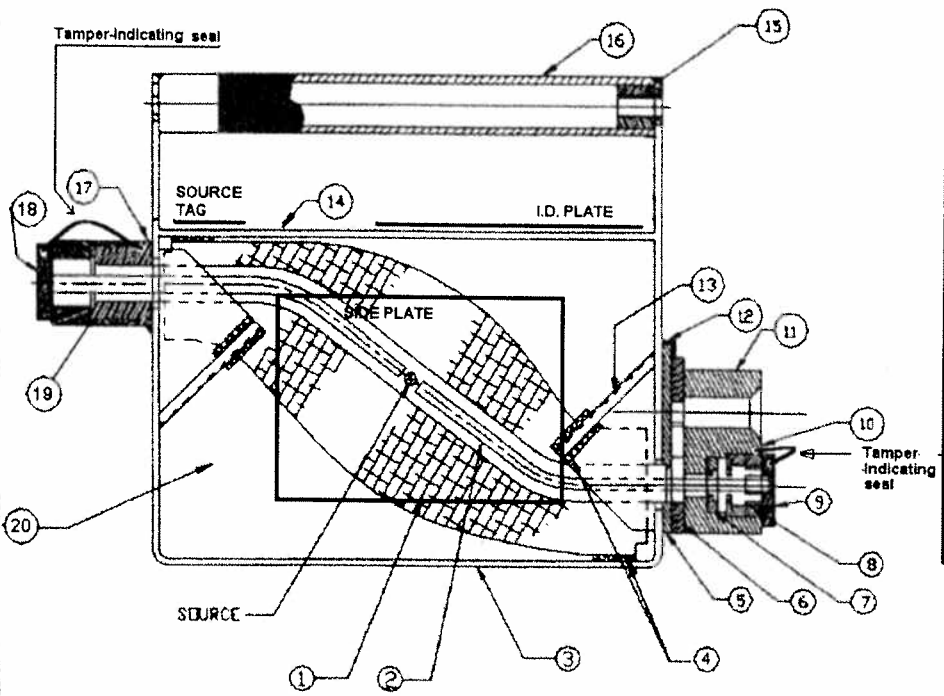
Industrial Nuclear Company application dated June 8, 1999.

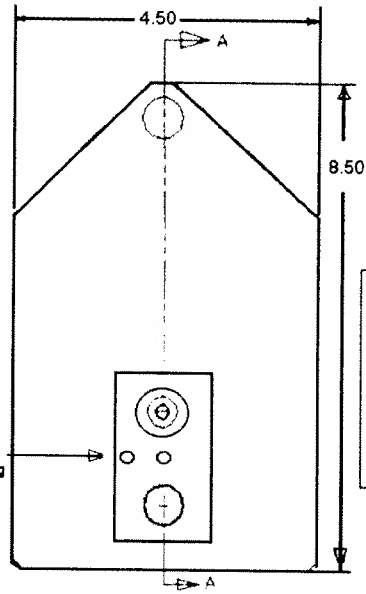
Supplements dated: June 9, August 6 and September 14, 1999; October 24, 2003; August 20, 2004; and March 22, 2007.

FOR THE U.S. NUCLEAR REGULATORY COMMISSION

Robert A. Nelson, Chief
Licensing Branch
Division of Spent Fuel Storage and Transportation
Office of Nuclear Material Safety
and Safeguards

Date: June 21, 2007





ZONE	REV.	DESCRIPTION	DATE	APPROVED
	1	Tolerances/ spec./clarification	DCN 99-01	
	2	NOTES / SPEC / SEAL / ID PLATE	DCN 99-05	
	3	Add side view	DCN 99-10	
	4	Weight/code/side & ID plate	DCN 02-01	
	5	Weight / I.D. Plate	DCN-07-01	

SIDE PLATES

CAUTION RADIOACTIVE MATERIAL

TYPE B(U) PACKAGE
UN 2916

INDUSTRIAL NUCLEAR COMPANY
MODEL IR100 CAMERA
CAPACITY 120 CURIES IRIDIUM-192
CONTAINS 38 LBS DEPLETED URANIUM
GROSS WT. 53 LBS
SERIAL NO.

TYPE B
USA/9157/B(U) -96

NOTES:

1. HOUSING CAVITY IS FILLED WITH POLYURETHANE FOAM FOR MOISTURE INSULATION. DENSITY, 20 POUNDS PER CUBIC FOOT.
2. MAXIMUM IR 100 PACKAGE WEIGHT, 53 LBS
3. MAXIMUM SHIELD WEIGHT, 38 LBS
4. SHIELD COATING
   PRIMER SEAL AND PAINT.

ITEM	QTY	PART NO	NOMENCLATURE	MATERIAL	CLASS
1	1	IN 200	DU SHIELD DEPLETED URANIUM	W.I. 1 REV.0	B
2	1	IN 200-1	S-TUBE Titanium or Zircaloy	ATMS 3625	B
3	1	IR100-2	HOUSING, BASE 304SS	A240	B
4	4	IR100-6	COPPER INTERFACE .020	COPPER	NITS
5	1	IR100-3	LOCK BACK PLATE 304SS	A240	B
6	1	IR100-16	SLIDE RECEIVER 304SS	A 276	C
7	1	IR100-17	SLIDE SPRING 304SS	COMMERCIAL Gr	C
8	1	IR100-18	RETAINER 304SS	A 276	C
9	1	IR100-19	DUST CAP 304SS	COMMERCIAL Gr	NITS
10	1	IR100-10	LOCK BODY 304SS	A276	B
11	1	IR100-15	LOCK CYLINDER PRESS	CAST ALLOY	C
12	1	IR100-13	INDICATOR PLATE 304SS	A240	C
13	2	IR100-4	SUPPORT PLATE (SADDLE) 304SS	A240	B
14	1	IR100-9	HOUSING, TOP 304SS	A240	B
15	1	IR100-8	RECEIVER, DUST CAP 304SS	COMMERCIAL Gr.	NITS
16	1	IR100-7	HANDLE 304SS	A269	C
17	1	IR100-11	OUTLET PORT 304SS	A 276	B
18	1	IR100-20	SHIPPING PLUG BRASS	COMMERCIAL Gr	C
19	1	IR100-12	PORT SWIVEL 303SS	A582	B
20	1		POLYURETHANE FOAM	COMMERCIAL Gr	NITS

PARTS LIST

SAFETY CLASSIFICATION ITS CAT A B C NITS

NEXT ASSY | USED ON | APPLICATION

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES TOLERANCE ARE FRACTIONS ± 1/32 DECIMALS .X ± .02 .XXX ± .005 ANGLES ± 2

MATERIAL STAINLESS STEEL 304

DRAWN M.ROSE 3/18/97
CHKD 3/18/97
APPD 3/18/97

INDUSTRIAL NUCLEAR CO., INC

IR 100 EXPOSURE DEVICE

SIZE B | DWG. NO. IR 100-1A | REV 5

SCALE 1:1 | SHEET 1

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**East Building, PHH-23
1200 New Jersey Avenue SE
Washington, D.C. 20590**

CERTIFICATE NUMBER: USA/9157/B(U)-96, Revision 7

ORIGINAL REGISTRANT(S):

Jerry Tucker
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Bill Huddleston
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REGISTERED USER(S):

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